Mortality due to nutrition associated diseases in veal calves

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Introduction

The Belgian white veal calf industry is specialized in raising Holstein Friesian (HF), Belgian Blue (BB) or crossbreed calves (HFxBB) on a milk powder diet until a body weight of ±250 kg. Nutrition associated diseases such as enterotoxaemia (Figure 1), ruminal disorders (acidosis or putrefaction) and perforating abomasal ulcers (type 3 or 4)[2] (Figure 2) are regarded as important causes of mortality, but very few objective data exist[1]. Therefore a study was performed to gather more precise information on the occurrence (incidence and relation with feeding regime) of these disorders.

Materials and methods

A longitudinal observational study on 3877 veal calves on 10 veal farms (5 HF, 3 BB, 2 HFxBB) was performed. Mortality, feeding regime, housing and treatments were recorded. Diagnosis was based on necropsy.

Results

- Feeding regime highly differed between BB and HF calves:
  - Belgian Blue: mainly skimmed milk powder (Figure 6).
  - Holstein Friesian: switched to cheaper nill products (no casein, replaced by vegetable proteins) as soon as possible (Figure 5).
- Mortality:
  - Global mortality= 5.5%; acute ruminitis, enterotoxaemia and perforating abomasal ulcerations accounted for 12,3%, 10,4% and 3.8% of the losses respectively.
  - Mortality due to enterotoxaemia was higher in the BB (19.5%) than in HF (3.7%) or crossbreeds (6.3%)(P<0.05)(Figure 3). In BB calves, large outbreaks occurred, while only sporadic cases in HF.
  - Mortality due to perforating abomasal ulceration was higher in HF (6.4%) than in BB (1.15%) or crossbreeds (0%).
  - Risk periods for enterotoxaemia and acute ruminitis: week 4-9 (start group housing + dietary changes) and week 26-30 (highly concentrated milk) (Figure 4).

Figure 1: Necropsy view of enterotoxaemia in a 5 month old veal calf.

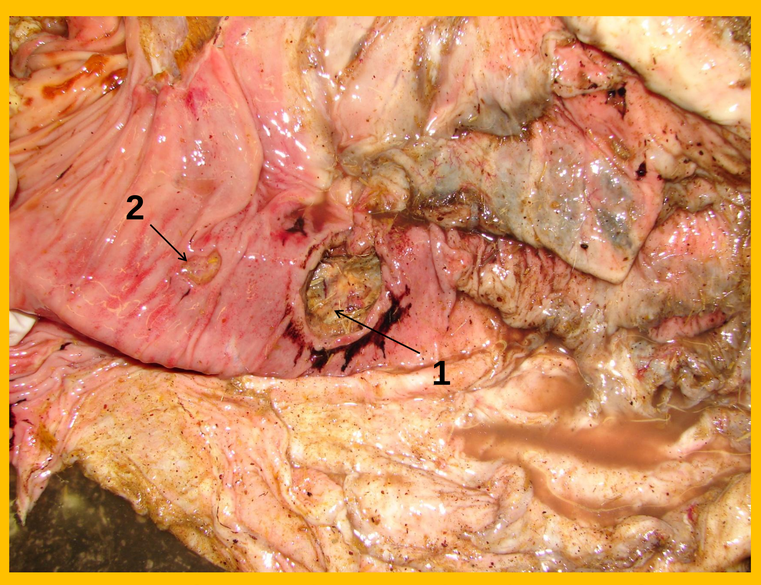

Figure 2: Perforating (1; type 4) and non perforating (2; type 1) abomasal ulceration in a veal calf.

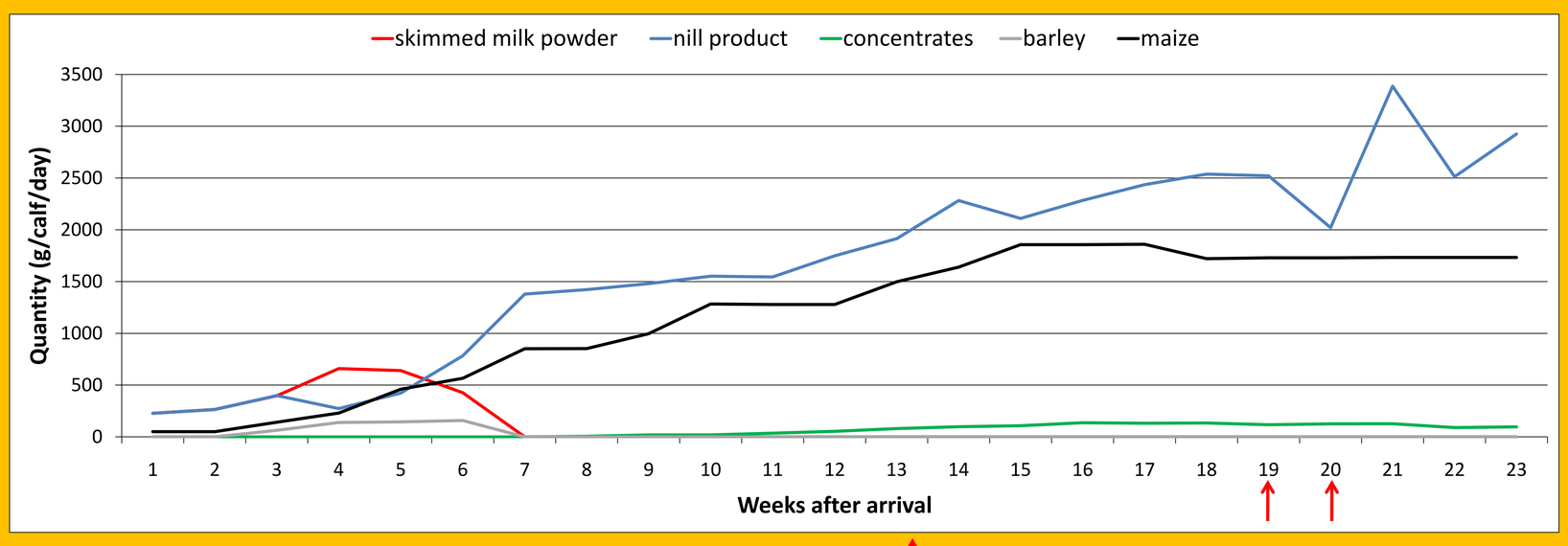

Figure 5: Feeding regime and occurence of enterotoxaemia cases (↑) in a Holstein Friesian veal calf farm (farm 9).

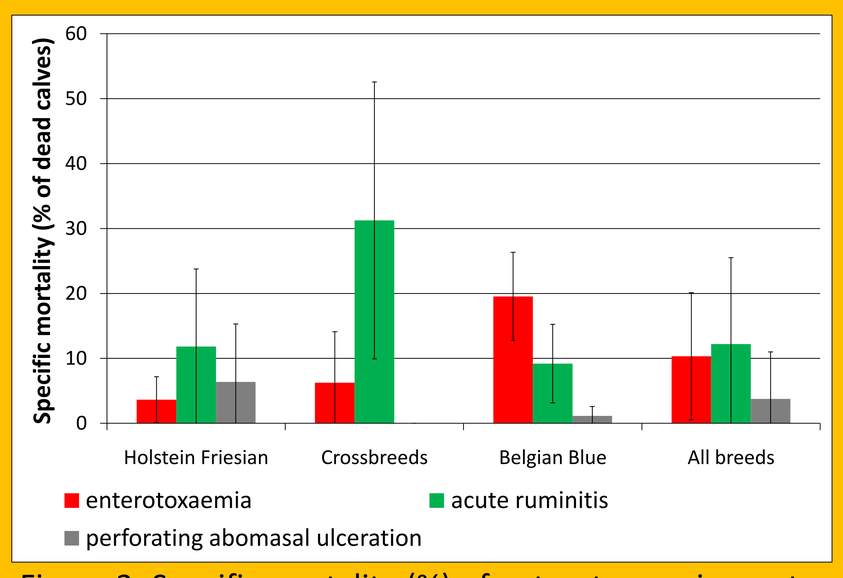

Figure 3: Specific mortality (%) of enterotoxaemia, acute ruminitis and perforating abomasal ulceration according to breed.

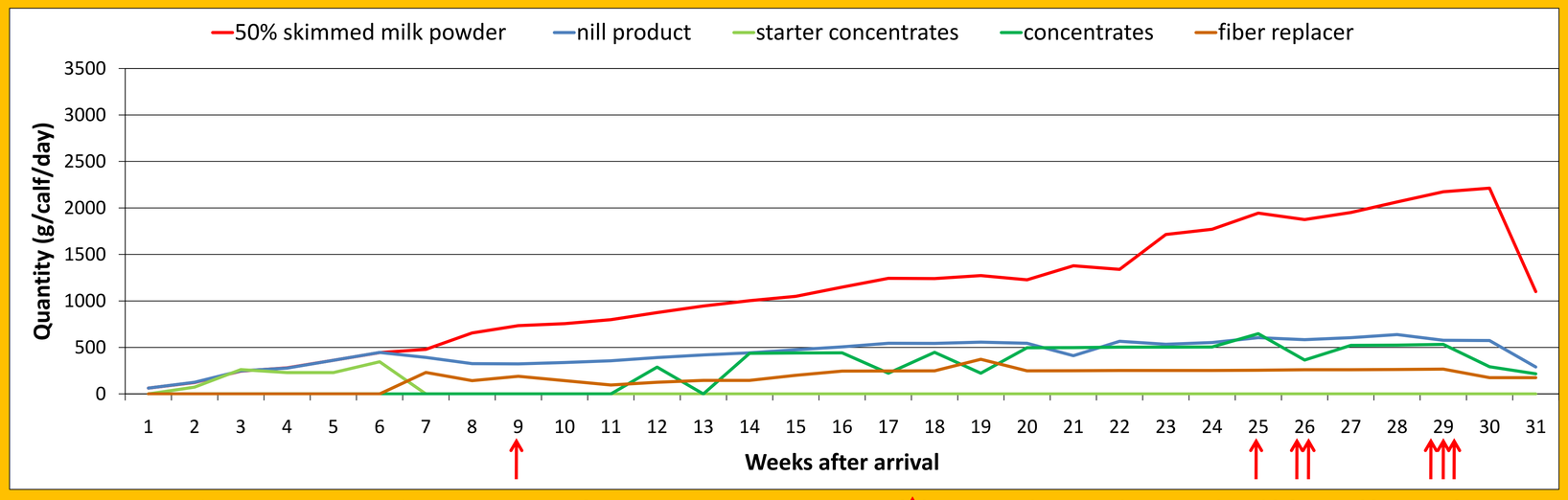

Figure 6: Feeding regime and occurence of enterotoxaemia cases (↑) in a Belgian Blue veal calf farm (farm 6).

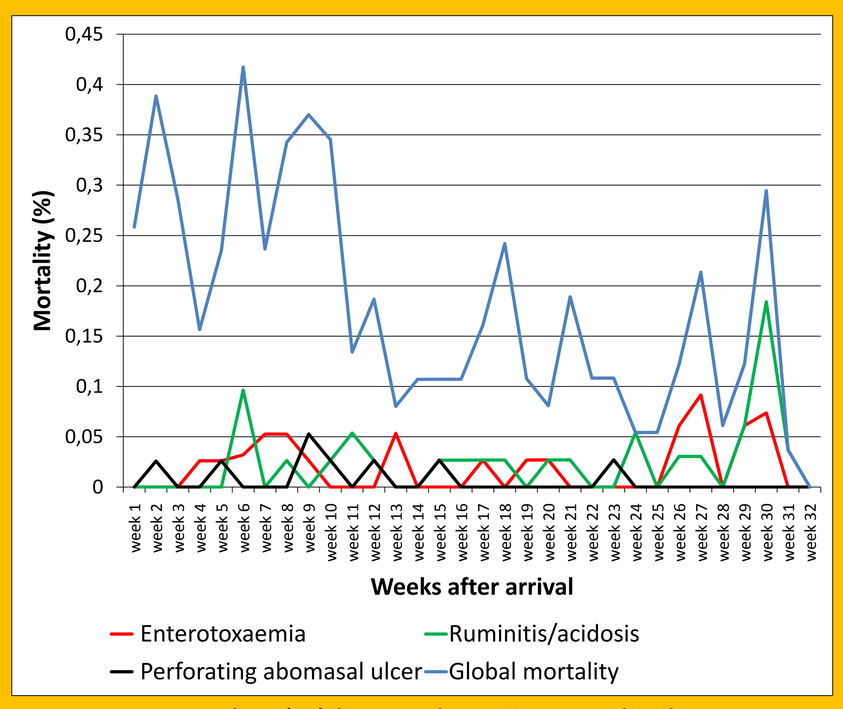

Figure 4: Mortality (%) by week in 3877 veal calves.

Conclusions

- Nutrition associated diseases account for 11 to 55% of the losses in veal calves.
- Sudden dietary changes and high quantities of feed predispose the veal sector for ruminal disorders and enterotoxaemia.
- Whether the higher incidence of enterotoxaemia in Belgian Blue veal calves is due to a different diet or to a breed predisposition remains to be determined.

References:
[1] Sargeant et al. (1994). Production practices, calf health and mortality on six white veal farms in Ontario, *Canadian Journal of Veterinary Research* 58, 189-195.
[2] Marchall T.S. (2009). Abomasal ulceration and tympany of calves. *Veterinary Clinics of North America Food Animal Practice* 25, 209-220.